Today’s Objectives

2. Discussion of next steps for the TMDL.
3. Receive feedback, answer questions, engage in discussion about the project.
Reminder Why We’re Here

• Exceedances of water quality standards in Elkhorn Slough, Moss Landing Harbor, Carneros Creek, and Bennett Slough.
  – Dissolved oxygen
  – pH
  – Un-ionized ammonia
  – Chlorphyll-a

In general, biostimulation
Part 1. TMDL Data Analysis Report

- Data sources
- Pollutants analyzed
- Spatial trends
- Temporal trends

Available on our website
Monitoring Data Sources
<table>
<thead>
<tr>
<th>Analyte</th>
<th>Records Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>1,391,552</td>
</tr>
<tr>
<td>Water Depth</td>
<td>1,236,410</td>
</tr>
<tr>
<td>Oxygen, Saturation</td>
<td>1,230,475</td>
</tr>
<tr>
<td>Oxygen, Dissolved</td>
<td>1,181,665</td>
</tr>
<tr>
<td>Salinity</td>
<td>1,147,518</td>
</tr>
<tr>
<td>Turbidity</td>
<td>964,962</td>
</tr>
<tr>
<td>pH</td>
<td>872,458</td>
</tr>
<tr>
<td>Specific Conductivity</td>
<td>806,389</td>
</tr>
<tr>
<td>Nitrate as N</td>
<td>290,955</td>
</tr>
<tr>
<td>Chlorophyll a</td>
<td>36,843</td>
</tr>
<tr>
<td>Orthophosphate as P</td>
<td>8,398</td>
</tr>
<tr>
<td>Ammonia (NH3) as N, Un-ionized</td>
<td>7,198</td>
</tr>
<tr>
<td>Ammonia (NH3+NH4) as N, Total</td>
<td>6,349</td>
</tr>
<tr>
<td>Nitrite as N</td>
<td>3,037</td>
</tr>
<tr>
<td>Nitrate + Nitrite as N</td>
<td>2,253</td>
</tr>
<tr>
<td>Ammonia (NH4) as N, Ionized</td>
<td>2,076</td>
</tr>
<tr>
<td>Floating Algae</td>
<td>1,579</td>
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<tr>
<td>Nitrogen, Total</td>
<td>1,300</td>
</tr>
<tr>
<td>Phosphorus as P</td>
<td>166</td>
</tr>
</tbody>
</table>
Spatial Trends

Descriptive statistics (*mean*, *interquartile range* (IQR), *minimum*, 25th percentile, *median*, 75th percentile, *maximum*, *sampling date range*).

- By analyte.
- By analyte – monitoring station.
- By analyte – monitoring station – monitoring year.
- By analyte analyte – monitoring station – monitoring year/month.
Dissolved Oxygen Example
Long-term Trends

- 54 significantly increasing trends.
- 50 significantly decreasing trends.
- Example
Seasonal Trends

South Marsh
From 2007-01-01 to 2015-02-03. N = 258022.

Oxygen, Dissolved at South Marsh 2007 - 2015

Time

DO (mg/L)

Month

Oxygen, Dissolved (mg/L)
Seasonal Trends

South Marsh
Oxygen, Dissolved (mg/L)

Month
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
Year

Monthly Median
9 8 7 6 5
Daily or Tidal Trends
Association Between Analytes

Elkhorn (37 stations)

Correlation Coefficient (r) key

-1 -0.8 -0.3 0 0.3 0.8 1
Part 2. Next Steps

- Numeric targets
- Mass loading evaluation
- Source analysis
- Implementation recommendations
Part 2. Next Steps (cont.)

Possible Numeric Target Options

1. Reduce nutrients by X% (e.g. 25%)
2. Use numeric targets from nearby watersheds
   - Lower Salinas TMDL, Pajaro River TMDL
3. Use numeric targets from TMDLs developed by other Regional waterboards
4. Use other models
   - that include ocean/Old Salinas River inflow
   - that include only watershed loading
5. Others?
Part 3. Discussion

- Discussion and questions about the project.
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Subscribe to our “Elkhorn Slough Biostim TMDL” email subscription list to be notified of TMDL progress and meetings.

[Website Image]
Thank You!
(extra slides start here)